

CLAIMS

1. A reciprocating piston machine comprising at least one working membrane (1) and/or at least one auxiliary membrane made from an elastomeric material and having an oscillating drive, engaging the membrane (1) in a central area (3), with a deformable membrane area (M) being provided between the central area (3) of the membrane (1) and a circumferential edge area (5) clamped in the reciprocating piston machine and deforming during the oscillating pumping movement, wherein a different geometrical configuration of the working membrane and/or the auxiliary membrane (1), caused by the drive, to mounting points provided in the central area and at the circumferential edge area is developed by two merging curves, which define a shape of the membrane.

2. A reciprocating piston machine according to claim 1, wherein a membrane cross-section of the working membrane and/or auxiliary membrane is sized in the deformable membrane area (M), such that during pumping movement almost identical tension and/or elastic deformations develop in an upper surface membrane zone of the deformable membrane area (M).

3. A reciprocating piston machine according to claim 1, wherein the working membrane and/or auxiliary membrane has at least two cantilever-shaped annular areas (7, 8) in the deformable membrane area (M), merging in a cross-

sectional reduction (9) of the membrane (1), and the cross-section of the membrane, starting from the cross-sectional reduction, enlarges in each of the annular areas (7, 8).

4. A reciprocating piston machine according to claim 3, wherein the cross-section of the membrane at least partially enlarges linearly in the annular areas (7, 8).

5. A reciprocating piston machine according to claim 3, wherein the cross-sectional reduction (9) ranges from 0.6 to 0.8 in reference to a diameter of the deformable membrane area (M).

6. A reciprocating piston machine according to claim 1, wherein the reciprocating piston machine comprises a membrane pump.

7. A reciprocating piston machine according to claim 1, wherein the working membrane of the membrane pump is a molded membrane or a flat membrane.

8. A working membrane or auxiliary membrane for a reciprocating piston machine, which is designed according to claim 1.